

**AMENDMENTS TO THE CLAIMS:**

Please replace the claims with the claims provided in the listing below wherein status, amendments, additions and cancellations are indicated.

1. - 8. (Cancelled)
9. (New) A control system for a floating mobile object, wherein,  
the floating mobile object comprises:
  - a main body part that can be considered as a single rigid body constituting a part of the thrust for the floating mobile object; and
  - an effector part for generating a thrust for the floating mobile object; and
  - a thrust transfer gate for dynamically connecting the main body part and the effector part, the thrust transfer gate being adapted to be able to actually measure a thrust from the effector part acting on the main body part, the main body part includes acceleration measurement means capable of measuring an acceleration of the floating mobile object, and
  - a thrust command to the effector part is obtained by using:
    - an output from the acceleration measurement means of the main body part; and

a measured thrust valve from the thrust transfer gate.

10. (New) A control system for a floating mobile object, wherein,  
the floating mobile object comprises:

a main body part that can be considered as a single rigid body  
constituting a part of the floating mobile object;  
an effector part for generating a thrust for the floating mobile  
object; and

a thrust transfer gate for dynamically connecting the main  
body part and the effector part, the thrust transfer gate being adapted to be able to  
actually measure a thrust from the effector part acting on the main body part,  
the main body part is dynamically connected only to the thrust  
transfer gate, the main body part being adapted to receive substantially all forces  
acting thereon via the thrust transfer gate, and  
a thrust command to the effector part is obtained by using a  
measured thrust value from the thrust transfer gate.

11. (New) The control system for a floating mobile object according to  
claim 9, wherein,

the thrust transfer gate includes force/torque measurement means capable of measuring a force/torque applied between the main body part and the effector part, and

the thrust command to the effector part is obtained by using:  
an output from the force/torque measurement means of the floating mobile object; and  
a target acceleration trajectory command obtained by converting an externally inputted target position/velocity trajectory command.

12. (New) The control system for a floating mobile object according to claim 10, wherein,

the thrust transfer gate includes force/torque measurement means capable of measuring a force/torque applied between the main body part and the effector part, and

the thrust command to the effector part is obtained by using:  
an output from the force/torque measurement means of the thrust transfer gate; and  
a target acceleration trajectory command obtained by converting an externally inputted target position/velocity trajectory command.

13. (New) A control system for a floating mobile object, wherein,  
the floating mobile object includes acceleration measurement means  
capable of measuring an acceleration of the floating mobile object,  
the floating mobile object is arithmetically divided into:  
a virtual main body part that can be considered as a single  
rigid body constituting a part of the floating mobile object;  
a virtual effector part for generating a thrust for the floating  
mobile object; and  
a virtual thrust transfer gate for virtually connecting the  
virtual main body part and the virtual effector part, the virtual thrust transfer gate  
being adapted to be able to estimate a thrust from the virtual effector part acting on  
the virtual main body part based on an output from the acceleration measurement  
means, and  
a thrust command to the virtual effector part is obtained by using an  
estimated thrust value from the virtual thrust transfer gate.

14. (New) The control system for a floating mobile object according to  
claim 13, wherein,

the virtual thrust transfer gate includes force/torque estimation means capable of estimating a force/torque applied between the virtual main body part and the virtual effector part, and

the thrust command to the virtual effector part is obtained by using:  
an output from the force/torque estimation means of the virtual thrust transfer gate; and  
a target acceleration trajectory command obtained by converting an externally inputted target position/velocity trajectory command.

15. (New) The control system for a floating mobile object according to any one of claims 9 through 14, wherein,

the main body part or the virtual main body part additionally includes inclination angle measurement means capable of measuring an inclination of the floating mobile object, and

the thrust command to the effector part or the virtual effector part is obtained by additionally using an output from the inclination angle measurement means.

16. (New) The control system for a floating mobile object according to any one of claim 9 through 14, wherein,

Docket No. F-9163

the floating mobile object additionally includes position/velocity measurement means capable of measuring a position or a velocity of the floating mobile object, and

the thrust command to the effector part or the virtual effector part is obtained by additionally using an output from the position/velocity measurement means and an externally inputted target position command or target velocity command.